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Geographic Intelligence Report

THE INDUSTRIALIZATION OF SLOVAKIA  
DEVELOPMENT AND ORIENTATION



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THE INDUSTRIALIZATION OF SLOVAKIA

DEVELOPMENT AND ORIENTATION\*

I. Introduction and Summary

Slovakia, long regarded as an [REDACTED] agricultural province of industrial Czechoslovakia,\*\* is today the focus of a highly publicized industrialization program initiated by the Czechoslovak Communist Government in 1949. The fact that the program is accomplishing its aim is attested to by the increasingly larger share that Slovakia is contributing to the total Czechoslovak production.

25X6

In 1938, the last year during which production was unaffected by World War II, production in Slovakia amounted to 8 percent of the total in Czechoslovakia; by 1960 it had increased to 17 percent. The designers of the current Five Year Plan (1960-65) envisage the attainment by 1965 of a Slovak economy whose production would amount to 20 percent of the total gross industrial output (according to the Czechoslovak formula for determining gross industrial output), a volume equal to that of all Czechoslovakia in 1948. The growth to date and that planned is materially altering the Slovak scene, largely through the construction of new manufacturing and processing plants and related facilities and the modernization and expansion of existing plants.

Except for small deposits of low-grade iron ore and coal, Slovakia lacks the natural resources for large-scale, diversified industrial development. Its principal assets for such development are its large potential labor supply and its central location within the Eastern European portion of the Soviet Bloc. Since 1949 the collectivization of agriculture in this once predominantly agricultural province has released workers for industrial jobs. By bringing industry to this labor supply, Slovakia, even though lacking in raw materials, is being made to contribute increasingly to the economic growth of Czechoslovakia and, indirectly, to that of the Soviet Bloc.

Strategically placed between the highly developed Czech Lands and the western border of the USSR, Slovakia serves both as a corridor

\* The conclusions contained in this report represent the best judgment of this Office as of 1 January 1962.

\*\* The Czechoslovak Socialist Republic (CSSR) consists of the Czech Lands (formerly the provinces of Bohemia and Moravia-Silesia) and Slovakia (see Map 35058, following p. 8).

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linking Czechoslovakia to the USSR and as an area of dispersal for Czechoslovak industry, the Bohemian portion of which lies in a relatively exposed position adjacent to Western Europe (see Map 35058, following p. 8). Western and southwestern Slovakia form a routeway -- an alternate to the Moravian Corridor -- between Poland and the southern Danubian countries. Although cut off to some extent from Poland by the Carpathian ranges on the north, Slovakia is open toward Hungary on the south. Therefore, raw materials can be brought into Slovakia from several directions without too much difficulty and can then be processed and manufactured into finished products.

Slovak metal-processing plants and petroleum refineries are now dependent in part on outside sources for raw materials and, as planned, will be much more dependent in the future. Iron ore from the USSR and coal and coke from the Czech Lands will supply the steel combine under construction at Košice. Bauxite from Hungary supplies the new Slovak aluminum plant. The petrochemical complex under construction near Bratislava will require crude petroleum from the USSR. Even after the planned expansion of electric-power facilities, Slovakia will still be somewhat dependent on outside sources of power.

The industrialization of Slovakia thus illustrates the growing economic interdependence of the Soviet Bloc and probably would not have been possible without inter-Bloc cooperation. In a sense, it is an example of classic Soviet planning whereby raw materials are brought together from different directions for processing in a central place. In this instance the central place lies outside the USSR, and the process requires the cooperation of the USSR with several of its Satellites. Similar plans have been carried out in other European Satellites -- in Poland, for example, at Nowa Huta -- but, apparently, Slovakia is the largest European Satellite region to which such planning has been applied thus far.

Not least among the reasons for the industrialization of Slovakia is the hope of the current regime that by economic development it can mitigate the antagonism of the Slovaks toward the Czechs, who have held the dominant position within the Czechoslovak state in the past. At first the Communist regime made some concessions to Slovak autonomy, but the most recent administrative reorganization practically eliminates Slovakia's autonomous role. The economic benefits that will be derived from industry may help salve "wounded" Slovak nationalism, but the industrialization program also will cut even more deeply into Slovak political aspirations because it will tend to integrate Slovakia more closely with the Czech Lands.

Because of its lack of basic resources, the level of industrialization attained by Slovakia may never approach that of such regions as Upper Silesia; but there seems little reason to doubt that the

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principal goals of the Communist regime will be attained eventually. It is likely also that the future will see industrial expansion according to a similar pattern in other currently underdeveloped areas of the European Satellites.

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## II. The Character and Orientation of the Land

Landlocked and predominantly mountainous Slovakia comprises about two-fifths of the land area of Czechoslovakia (see Map 35058, following p. 8). Slovakia stretches 265 miles from east to west and in width tapers from a maximum of 125 miles in the west to 60 miles in the east. The total area of Czechoslovakia is 49,353 square miles; Slovakia covers 18,917 square miles, or an area roughly equal to that of West Virginia. Its continental and latitudinal position in Europe is comparable to that of northern North Dakota and southern Manitoba. Central Slovakia is about 425 air miles from the Baltic Sea at Szczecin, Poland, and 540 air miles from the Black Sea at Sulina, Rumania, near the mouth of the Danube River.

In the west the Malé and Bílé Karpaty and the Javorníky mountain ranges (maximum elevation: 3,520 feet) extend northeast from the Danube River to the Polish frontier. The Beskydy Mountains, consisting predominantly of low ranges with rounded summits and gentle but heavily dissected slopes, form the outer bow of the arc-shaped Carpathian Mountain system. In the east the low, wooded Čerchovské and Slanské Mountains, which extend from the Polish border to the Hungarian, complete the arc. Within the arc are other mountain ranges, the most impressive being the Vysoké and Nízke Tatry Mountains (see Figure 1).



Figure 1. Mount Hrubý Vrch. The rugged, rocky, unforested Tatry Mountains are a major barrier to communications in northern Slovakia.

Both are alpine in character, with treeless, steep, rocky upper slopes and many summit peaks. Of these, Stalinov štít, 8,737 feet above sea

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level, is the highest point not only in the Tatry but in all Czechoslovakia. Outliers of the Tatry Mountains such as the Chočské Pohorie are steep enough to limit communications to a few valleys, particularly those of the Váh and Orava Rivers (see Figure 2). The Slovenské Rudohorie (Slovak Ore Mountains), are low and highly dissected, with summits less than 4,000 feet in elevation (see Figure 3). The lower Vtáčnik and Kremnické Mountains are not so awesome as the Tatry, but both mountain ranges are important to Slovakia because they contain the major mineral deposits of the province.

Embayments of the Little Hungarian and Great Hungarian Plains form most of the lowlands of Slovakia, or about one-fifth of the land area. The lowlands include the most important agricultural region within Slovakia.

The attenuated form of Slovakia accounts for the high ratio of its border length to its land area. Of the 1,030 miles of border, 810 miles follow mountain ridges, primarily on the east, north, and west; whereas only 220 miles are waterways, primarily the Danube and Ipel' (Hungarian: Ipoly) Rivers. Slovakia is separated from the Czech Lands by approximately 140 miles of mountainous provincial border. Slovakia shares a common international border with Poland (337 miles), the USSR (60 miles), Hungary (420 miles), and Austria (73 miles). The Austrian border is the only frontier with a country not under Communist control (see Map 35060, following p. 56). The most significant frontier is the 60-mile-long border with the USSR on the east. This frontier consists of low, heavily dissected, forested mountains in the north and the upper Tisa Plain in the south (see Figure 4). Although in general the border follows mountainous terrain, a number of low passes and valleys facilitate communications with neighboring countries.

In the past the physical barriers bordering Slovakia on three sides tended to orient the province toward Budapest and Hungary rather than toward Prague and the Czech Lands. Slovakia was under the direct rule of Hungary within the Austro-Hungarian Empire until the end of World War I. Under the Hungarians the Slovak natural resources were developed enough to support a small metallurgical industry and to permit shipments of ore and semifinished metal products to the Budapest industrial complex. In 1913, for example, Slovak production of iron, copper, antimony, and manganese as well as of iron pyrites accounted for amounts varying from 56 to 71 percent of the total Hungarian production of these minerals. <sup>1/\*</sup> With the formation of the Czechoslovak state in 1919, through the union of Slovakia and the Czech Lands, however, Slovakia stagnated industrially because it had lost its trade

\* For serially numbered source references, see Appendix D.

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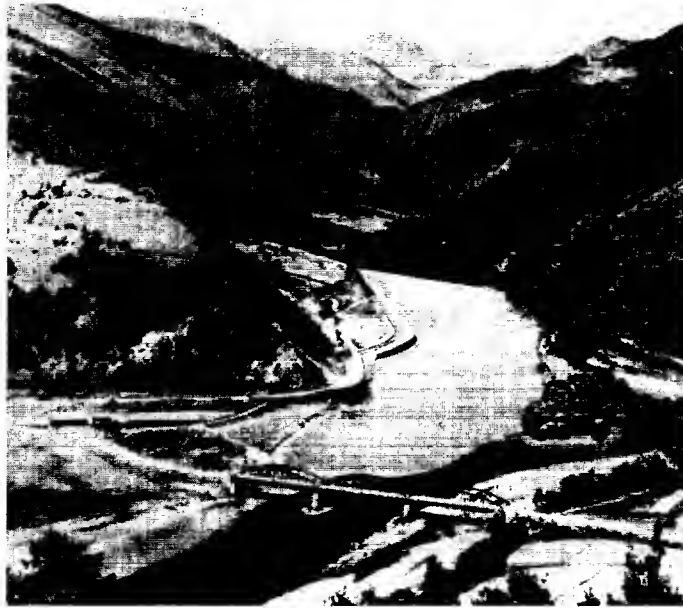


Figure 2. Looking up the Orava Valley from the confluence of the Váh and the Orava Rivers. On the left are the Magura Mountains, on the right the Chočské Mountains. New reservoirs in these narrow valleys would flood existing transportation routes.



Figure 3. Čierny Balog (48°45'N-19°40'E). This small village is in the Čierny Hron Valley in the Slovak Ore Mountains. Although the mineral deposits of these mountains are exploited, many of the lower slopes are used for agriculture, particularly grazing. The higher slopes generally are forested.

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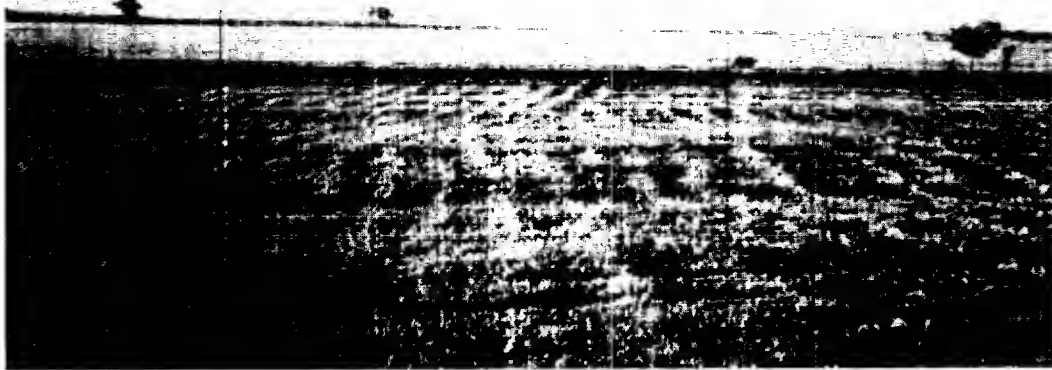
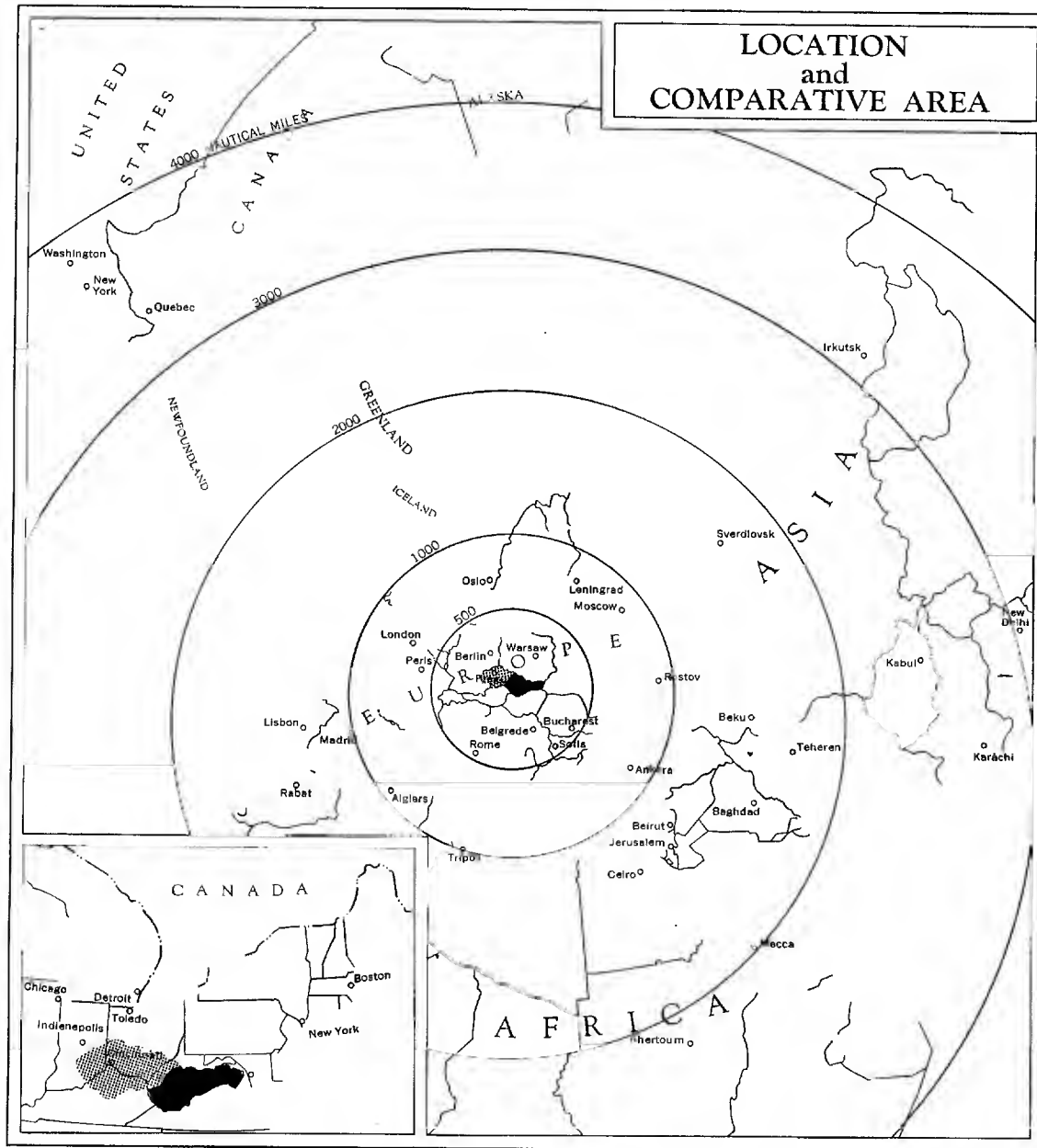


Figure 4. View looking toward USSR border. Guard towers are located along this segment of international border, which crosses the flat, extensively cultivated upper Tisa Plain.

with Hungary and, on the domestic markets, could not compete with the industrially more advanced Czech Lands. The improvement of east-west rail connections since the advent of the Communist government in Prague has enabled Slovakia to fulfill the function of corridor between the Czech Lands and the USSR, and the province has thus been transformed from an economic backwater to an area of potential industrial importance. Further improvement of the transportation network will tend even further to reduce the effectiveness of physical barriers.

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### III. Population and Labor Supply

Before World War II it was a practice of Slovak labor to seek seasonal agricultural employment in the Czech Lands and in Hungary. With the collectivization of agriculture, farm families generally left only one farmer on the land. Other members of the family -- who, in general, preferred an occupation other than collectivized farming -- became available for jobs in industry. It is primarily from this large labor pool of former agricultural workers that the national committees of Slovakia recruited manpower to launch the industrialization program, and it is from this labor pool that the committees continue to try to recruit workers to satisfy current manpower requirements of industry and to settle the sparsely populated border areas in the Czech Lands. The state economic development plan for 1960, for example, included instructions to national committees in Slovakia to assure the state, for that year, some 19,500 workers to work in the main production sectors of the economy. About 1,350 of the 19,500 workers were to be recruited for resettlement of the border areas, chiefly for agricultural work.

Major emphasis still remains on recruitment of Slovak labor for work in the coal mines, but increasing emphasis is being placed on recruitment of Slovak labor for metallurgical plants. It is anticipated that workers leaving eastern Slovakia for employment in the iron and steel plants of the Ostrava area in the Czech Lands will later form the nucleus of a labor force for the East Slovak Iron Works at Košice, which are currently under construction. 2/

The present population of Slovakia slightly exceeds 4 million, or about 30 percent of the total population of Czechoslovakia. Since 1957 the natural increase in population of Slovakia has exceeded that of the Czech Lands. 3/ Of the population of Slovakia, 87 percent is Slovak and less than 1 percent Czech. The remainder are Hungarians, Ukrainians, Russians, Poles, and Germans. Hungarians, comprising 10 percent of the total population of Slovakia, form the principal minority group. They inhabit primarily the southern districts (okresy) and in some cities and villages constitute a majority of the population. In the river port of Komárno, for example, Hungarians comprise more than one-half of the population of 26,000.

The government is cognizant of the nationalistic feeling of the ethnic groups and on occasion has censured them for their "bourgeois nationalism, anticollectivization agitation, and efforts to inflame anti-Czech resentment" 4/ against functionaries sent in to help speed Slovak industrialization. There is no evidence, however, that differences between the nationalities, especially between Czechs and Slovaks and between Slovaks and Hungarians, will precipitate any action that would impede the industrialization program.

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The population of Slovakia is unevenly distributed because of terrain, variations in land use, and varying economic activities (see Map 35211, following p. 13). Some 50 percent of the population lives in villages of 2,000 or fewer inhabitants, and 19 percent lives in communities (obci) having from 2,000 to 5,000 inhabitants. The remainder of the population is distributed among 68 settlements of more than 5,000. The only two cities with populations exceeding 50,000 are Bratislava (263,000), the capital of Slovakia, and Košice (85,000), a rapidly growing cultural and economic center of eastern Slovakia. Settlements in the plains are closely spaced, whereas those in the mountainous regions are farther apart and are located primarily along the major rivers.

Most of the inhabitants of the small villages on the plains traditionally have been engaged in agriculture (see Figure 5); in the mountains, the people have augmented their subsistence type of agriculture with forestry or grazing (see Figure 6). Today an increase in the population of a settlement almost certainly reflects the introduction of industry and a notable increase in the percentage of inhabitants employed in industry at the expense of agriculture. In the large mountain towns such as Prešov, Žilina, Martin, Prievidza, and Handlová, the growth in population since 1948 has been very closely related to the development or expansion of industry and mining in these areas (see Table 1, below, and Map 35060, following p. 56).

Table 1

Population Increase of Mountain Towns in Slovakia a/  
1948-59

Towns of more than 10,000 in 1959	31 Dec 48 b/	31 Dec 59 c/	Percent Increase
Vysoké Tatry	5,213	14,975	187
Prievidza	5,902	13,510	129
Žilina	18,040	34,234	90
Banská Bystrica	12,514	22,037	76
Prešov	20,329	35,248	73
Zvolen	13,184	21,551	63
Martin	20,004	26,365	31

a. During the period 1948-59 the populations of all towns in Slovakia having more than 10,000 inhabitants increased 46 percent, from a total of 634,743 in 1948 to a total of 927,280 in 1959.

b. 5/  
c. 6/

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Figure 5. Main street of Čilizská Radvň ( $47^{\circ}50'N-17^{\circ}42'E$ ). The village is a cattle collection center and agricultural settlement on the plains of southwestern Slovakia. It is representative of many agricultural villages throughout Slovakia.



Figure 6. Dolný Kubín ( $49^{\circ}12'N-19^{\circ}18'E$ ) in the Orava Valley of northern Slovakia. Dolný Kubín is the site of the new electric plant, Electro-Praga, but agriculture and forestry are still the major economic pursuits of the valley.

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The population density for Slovakia as a whole is about 210 persons per square mile.\* The most densely populated area is the Bratislava--Nové Zámky--Nitra triangle of southwestern Slovakia (see Map 35211, following p. 13), which includes the industrialized capital and the developing industrial settlements of the lower Váh Valley. A slightly less densely populated area, centered on Žilina, is the upper Váh Valley, another area of rapid industrialization. In this area of fairly rough terrain, industrial workers currently comprise 20 percent of the labor force compared with 7 percent in 1946. The industrial area in and around Košice is the most densely populated part of the eastern Slovakia lowland. All of the areas having some established industries and others in various stages of construction are attracting additional labor from forestry, grazing, and subsistence agriculture, chiefly from the mountains of central and northern Slovakia. Table 2, below, shows the striking increase in the number of industrial workers in a few selected districts.

Table 2

Number of Workers in Industry in Slovakia per Thousand People a/  
1946 and 1957

<u>District b/</u>	<u>31 Dec 46</u>	<u>31 Dec 57</u>
Ilava	67.5	254.2
Kremnica	60.9	210.0
Martin	65.5	209.5
Partizánske	N.A.	226.1
Považská Bystrica	142.1	226.0
Prievidza	60.1	243.6
Púchov	65.6	168.2

a. 10/

b. According to the administrative divisions in effect on 31 December 1957. Since July 1960, Slovakia has been administratively divided into 3 regions (kraje): Západoslovenský, Východoslovenský, and Stredoslovenský; and 33 districts (okresy).

Nearly 60 percent (2,777,000) of the total population of Slovakia is in the 15 to 59 age group that represents its potential labor force. Some 1,030,000 workers in the socialist sector of the economy of Slovakia

\* Delaware has a density of 224 persons per square mile; mountainous West Virginia has a density of only 77 per square mile.

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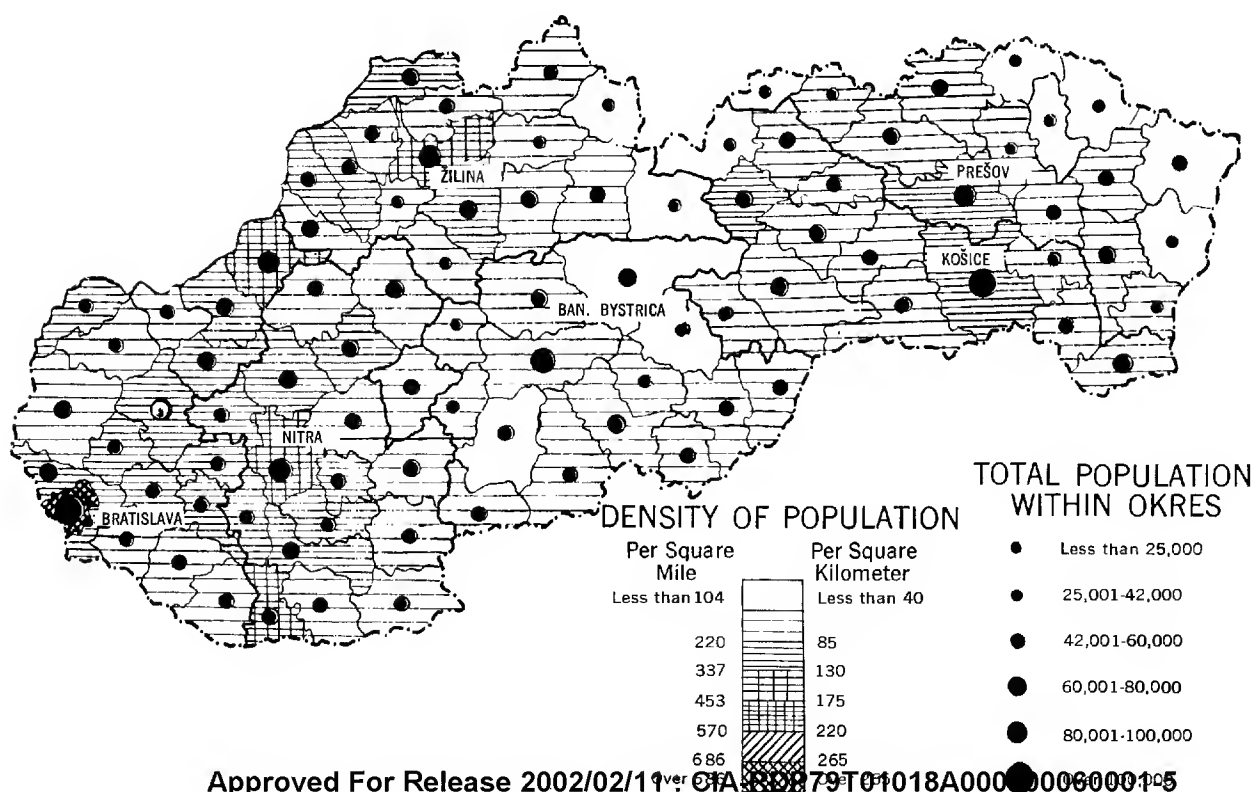
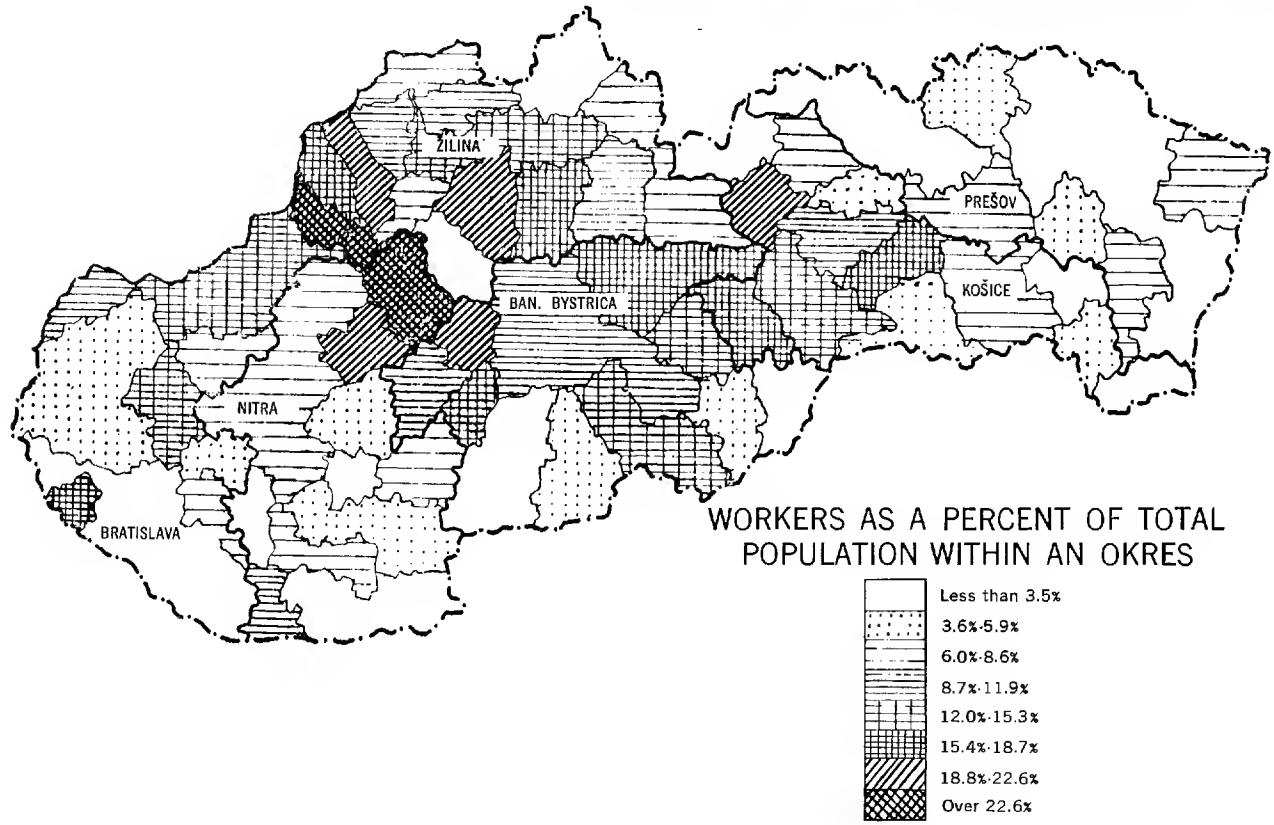
are employed by the government, about 33 percent of them in industry.\* The Slovak working force amounts to 17 percent of the total labor force in Czechoslovak industry. Women comprise 40 percent of the Slovak labor force. 7/ In 1957, the 109,000 women employed in the industrial sector of the economy constituted 32 percent of all industrial workers in Slovakia. 8/

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\* This total does not include workers employed on Collective Farms (Jednotné Zemědělské Družstvo, JZD) or apprentices.

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# SLOVAKIA: POPULATION



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IV. Mineral ResourcesA. General

Czechoslovak industry has outgrown its mineral-resources base, and the country has been importing increasingly large amounts of iron ore and other minerals annually. In 1959, imports of iron ore totaled 6,385,000 tons,\* or more than twice domestic production. Of the imported ore, 73 percent came from the USSR, 9/ which is also the main source of ferroalloys and nonferrous minerals used in Czechoslovakia. Increased exploitation of Slovak mineral resources can do little to reduce the national minerals deficit. Instead, the current extensive industrialization program for Slovakia is increasing the dependence on imported minerals. Iron ore, ferroalloys, and base metals (copper, lead, and zinc) occur in Slovakia but in quantities insufficient to meet domestic requirements. Many of the mines currently in operation were operating before World War I. Although rare metals have been mined for centuries in central Slovakia, their collective value today is small. In Slovakia, only antimony, building materials, graphite, and limestone occur in sufficient quantities to meet Czechoslovak needs.

The economically exploitable mineral resources are concentrated in the Slovak Ore Mountains in central Slovakia within 150 miles of the most distant border (see Map 35061, following p. 56). In 1955 the Czechoslovak government, recognizing the poor minerals base of the country, initiated through the Central Geologic Institute in Prague (Ústřední Geologický Ústav v Praze) an intensive nationwide geological survey. To date, no new major mineral deposits have been discovered. The survey, however, is providing greater knowledge of the known fields and deposits.

B. Iron Ore

Slovak iron ore deposits, chiefly siderite of a low iron content, occur primarily in the areas around Sirk, Rožňava, Vyšný Medzev, Rudňany, and Gelnica in the Slovak Ore Mountains. Slovak production has consistently accounted for more than 55 percent of the iron ore mined within Czechoslovakia. In spite of boasts of tremendous increases in production, Slovak production of iron ore in 1960 totaled 1,846,000 tons -- only 400,000 tons more than was mined in 1913 under the Hungarians.

Preparatory to smelting, the low-grade ore is concentrated and then usually mixed with imported high-grade ores (see Figure 7). New ore-concentration plants are under construction at Rudňany and Rožňavské

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\* Tonnages are given in metric tons throughout this report.

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Bystré. Although production of iron ore may quantitatively meet the needs of current Slovak iron-producing facilities, such production will be entirely inadequate to meet the needs of the new East Slovak Iron Works in Košice when it begins operation.

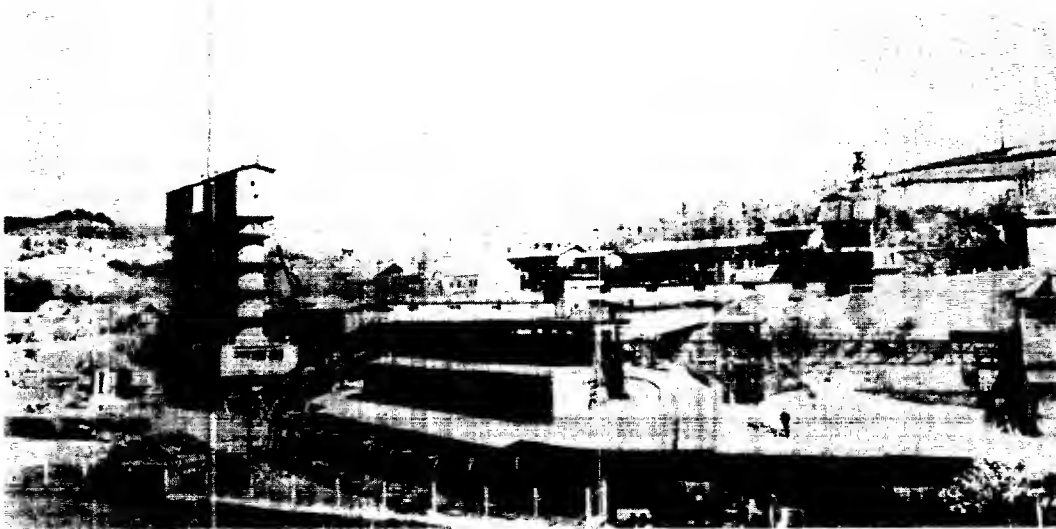


Figure 7. An iron-ore processing plant. This plant at Sirk is one of several in the Slovenské Rudohorie, where most of the Slovak iron ore deposits occur.

#### C. Nonferrous Ores

Slovak production of antimony, primarily from deposits near Čučma and Švedlár, accounts for the position of Czechoslovakia as a major European producer. Production not only supplies domestic needs but also provides a surplus for export to other Satellites.\* 11/

The principal copper-ore deposits occur near Nižné Slovinčy. The low-grade ore is transported via aerial cable to the copper refinery at Krompachy, the site of the largest thermal electric powerplant in eastern Slovakia. It is most unlikely that production of copper ore has increased appreciably since 1938, when 117,790 tons of copper ore were mined in Slovakia. Because of metal shortages, however, the Communist government has continued to exploit marginal deposits of copper and

\* No statistics for current Slovak production of antimony are available. In 1938, approximately 13,000 tons of ore were mined, or 70 percent of the Czechoslovak total. Production in 1950, in terms of metal, was 2,000 tons, or 4.1 percent of world production.

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other metallic ores, whose nonprofitable operation before World War II was maintained chiefly as an unemployment-relief measure.

Some manganese ore, unsuitable for use as a ferroalloy but used as a blast-furnace burden, is mined near Švabovce and Hôrka in the Poprad district. Relatively small amounts of mercury, lead, zinc, silver, and gold are mined, none in quantities sufficient even for current industrial requirements.

D. Nonmetallic Minerals

Slovakia possesses rich deposits of ceramic, building, and refractory materials but lacks basic fertilizer minerals such as potash, phosphate, and nitrate. Abundant deposits of limestone are quarried in western and central Slovakia, and production from them supplements that of the larger deposits located in the Czech Lands. Slovak production of industrial salt from beds near Prešov and several other minor deposits is insufficient to meet domestic needs.

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V. Fuel and PowerA. Distribution of Resources

The lack of fuels and the underdevelopment of the hydroelectric potential continue to be major deterrents to the industrial development of Slovakia. All coke for the metallurgical industry and much of the coal required for the thermal electric powerplants are brought in from outside, principally from the Czech Lands. Not until 1954 was the first coal mine in eastern Slovakia (near the town of Sejkov) opened up although fields in central Slovakia have long been operational. In spite of extensive and intensive geological research, mineral fuels sufficient to alleviate the fuel-poor situation have not been located.

The province is without any high-grade coal or metallurgical coking coal. Current production is limited to brown coal and lignite and is centered chiefly on Nováky and Handlová in the Vtáčnik Mountains. Lesser fields are located near the southern border at Modrý Kameň and Lučenec and in eastern Slovakia near Sobrance (see Map 35061, following p. 56). Production of brown coal and lignite increased from 827,000 tons in 1938 to 3,014,000 tons in 1960, with brown coal accounting for 1,650,000 tons. <sup>12/</sup> The current production of coal in Slovakia is about 5 percent of the Czechoslovak total.

An extensive and intensive petroleum exploration program, focused on the lower Morava Valley and the upper Tisa Plain, has not revealed any significant new deposits. The currently producing fields, all of which were in operation before World War II, are at Gbely in the southwest, Medzilaborce in the northeast, and Turzovka in the northwest (see Map 35061, following p. 56). In 1938 these fields produced 15,500 tons of petroleum, or 85 percent of the Czechoslovak total. Increased production from established fields, including new wells that have been drilled, has substantially increased the total production in Slovakia from 25,430 tons in 1946 to an estimated 105,000 tons in 1959, but current production still is negligible in terms of domestic requirements. Czechoslovak imports of petroleum in 1960 totaled 2,253,000 tons -- about 99 percent of which came from the USSR and the rest from Bulgaria. A Slovak petrochemical complex currently under construction at Vlčie Hrdlo near Bratislava will depend mainly on imports of Soviet crude oil.

Reserves of natural gas are also limited, and its use as a source of power is therefore restricted. Major gas deposits occur near Zohor in the lower Morava Valley and lesser deposits in the environs of Turzovka and Medzilaborce. Before 1948, little of the available gas was used, but by 1957 the annual ~~consumption~~ <sup>production</sup> had reached approximately

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681 million cubic meters. Recently, gas deposits have been discovered at Malacky, Závod, and Záhorská Ves in southwestern Slovakia and at Sečovce in eastern Slovakia. A gas transmission line connects the southwestern fields with the industrial complex at Bratislava, which includes a gas-fueled thermal electric powerplant, and also with Brno, Moravia. The growing industrial complex of the Váh Valley is served by recently completed lines that connect Bratislava with Martin via Trnava, Dubnica nad Váhom, and Žilina.

### B. Development of Electric Power

Slovakia has adopted an ambitious program for the expansion of its electric-power generating capacity, but its current deficiency probably will continue for some time. Consequently, considerable amounts of electric power now have to be imported from other parts of Czechoslovakia or from foreign sources (see Table 3, below). By the time all planned construction has been completed, however, the power requirements of Slovakia will be nearly in balance. Because of locational convenience, some areas may continue to import electric power, but other areas may have a surplus to export.

Table 3

Sources of Electric Power Consumed in Slovakia a/  
Selected Years, 1937-59

<u>Year</u>	<u>Thousand Kilowatt-Hours</u>		
	<u>Local Production</u>	<u>From Moravia</u>	<u>From Foreign Sources</u>
1937	432,900	N.A.	128
1948	836,916	54,845	2,734
1950	998,446	163,613	4,769
1953	1,505,937	534,872	6,792
1959	3,994,000	N.A.	N.A.

a. 14/

Production of electric power in Slovakia has increased from 837 million kilowatt-hours (kwh), or 11 percent of Czechoslovak production, in 1948 to 3,994 million kwh, or almost 20 percent of the national total, in 1959. Electricity is now available throughout virtually all of Slovakia, whereas electrification had reached only about 25 percent of the villages in 1937.\*

\* The last village in Slovakia received electricity on 4 September 1960. Some hamlets and isolated farmsteads are still without electricity because of their location in respect to power lines. 13/

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Most of the electric power now generated in Slovakia comes from thermal electric plants, and the proportion has increased during the postwar period in spite of the building of new hydroelectric plants (see Table 4, below, and Figures 8, 9).

Table 4

Production of Electric Power in Slovakia by Method of Generation a/  
Selected Years, 1948-53

<u>Year</u>	<u>Hydroelectric</u>	<u>Percent</u>	
		<u>Thermal</u>	
		<u>Steam b/</u>	<u>Oil or Gas</u>
1948	30.5	68.9	0.6
1950	29.3	70.3	0.4
1952	23.5	76.0	0.5
1953	25.3	74.2	0.5

a. 15/

b. Coal probably used as fuel.

The relatively dense hydrographic network of Slovakia, however, offers a large potential source of power. Before World War II, hydroelectric development was virtually nonexistent, being limited to several plants of small capacity serving local industries in the Hron Valley. By 1953, as a result of postwar development, hydroelectric powerplants generated approximately one-fourth of all electricity produced in Slovakia (see Table 4, above). Slovakia has a theoretical potential production of 7.6 billion kwh, which is 54 percent of the theoretical hydroelectric potential of Czechoslovakia as a whole, 16/ but only 18 percent of the Slovak potential is currently being used (see Map 35061, following p. 56).

Most of the hydroelectric development has been along the Váh, the longest and most important river in Slovakia, which provides 58 percent of the waterpower of the province (see Appendix A). Because of seasonal fluctuations of water volume as well as terrain unfavorable for the construction of high dams, a number of powerplants of the run-of-the-river type have been constructed (see Figures 10, 11). At present, 11 hydroelectric plants -- with capacities ranging from 14,000 to 67,500 kilowatts and with annual productions of 75 million to 150 million kwh -- are in operation. Emphasis has been on the development of the middle Váh Valley for power to serve the many expanding, new, or planned industries in that area (see Map 35061, following p. 56). On completion of the Váh power projects, the entire system will produce 410 million kwh annually. With the exception of the Hnilec River, which has a

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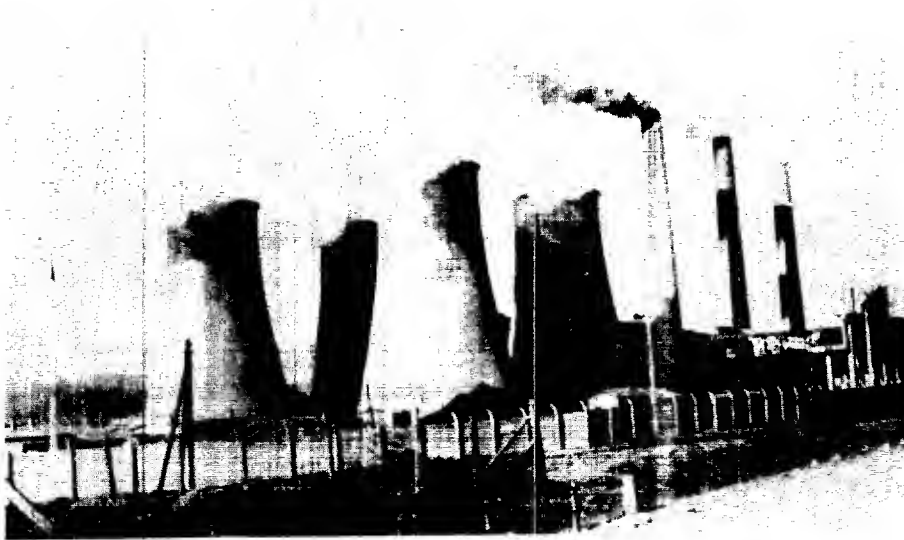


Figure 8. The thermal powerplant at Nováky. This plant produces a large percentage of the total production of electricity in Slovakia.



Figure 9. Orava Dam. The impoundment of water behind this dam forced the evacuation of several villages in Slovakia and Poland and also flooded some agricultural land on both sides of the border.

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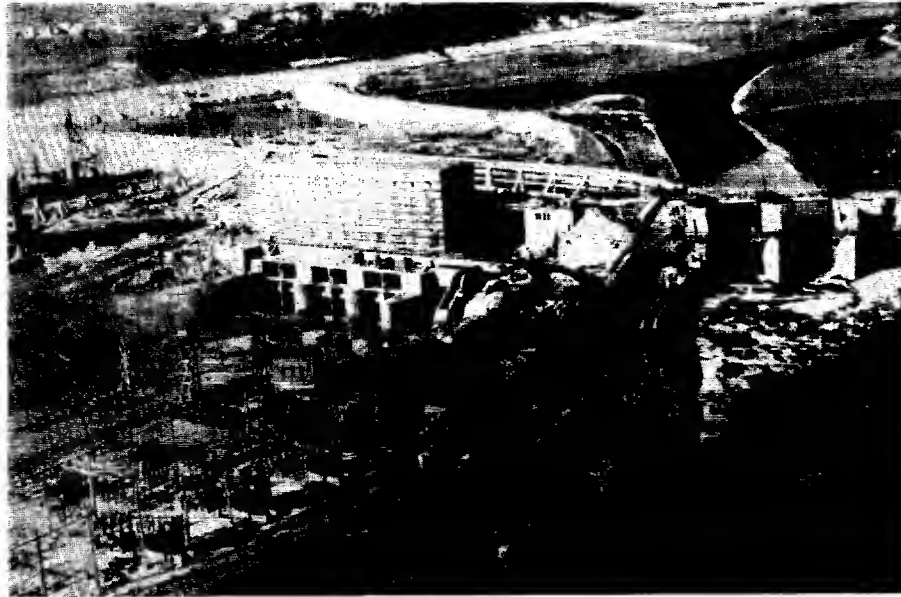


Figure 10. The Krpel'any Dam on the Váh River, during construction (November 1957). Most of the hydroelectric development of Slovakia is along the Váh River.



Figure 11. Krpel'any Dam after completion in 1960. Váh River is on the right and the canalized tailrace leading to power stations downstream appears in left foreground.

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small-capacity plant (26,600 kilowatts) at Dobšiná that serves part of eastern Slovakia (see Figure 12), rivers other than the Váh remain virtually untapped.

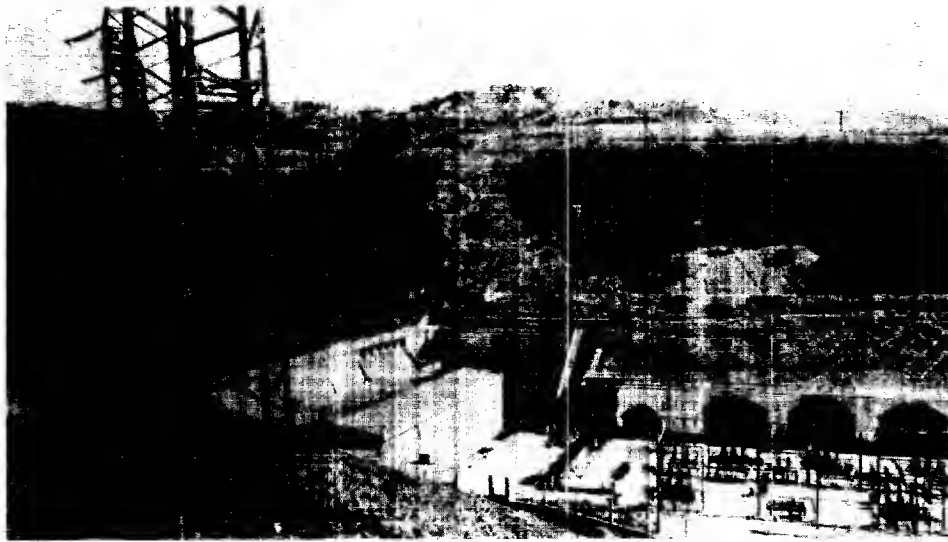


Figure 12. The Dobšiná hydroelectric powerplant. Water is pumped from the Hnilec River over a hill to the plant's reservoir.

Plans to rectify the Slovak power shortage include the construction of additional thermal electric and hydroelectric powerplants, an atomic reactor (reportedly under construction at Bohunice), and the importation of electricity from neighboring countries (see Map 35061, following p. 56, and Appendix A). On 29 March 1961, Czechoslovakia and Rumania signed a trade agreement whereby Czechoslovakia will furnish Rumania with material, equipment, and machinery for the construction of thermal electric powerplants. In payment Czechoslovakia will receive electricity transmitted to Slovakia over high-tension lines from Rumania. <sup>17/</sup> Additional imports of electric power that are dependent on the construction of planned powerplants, such as that at Nagymaros, Hungary, are under consideration.

The current construction of industrial plants in power-poor regions such as eastern Slovakia reflects a planned dependence on the import of electricity from distant generating areas. A network of high-voltage (380-kilovolt and 220-kilovolt) transmission lines, now in various stages of development, eventually will connect areas generating a surplus of electric power with those deficient in power (see Appendix A).

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VI. Transportation

In spite of the mountainous terrain of Slovakia, the construction of a transportation net within the province has been favored by the numerous passes, low basins, and river valleys that facilitate movement. International traffic tends to be channeled through a few historic avenues of communication -- for example, the Moravian Corridor on the western perimeter, which connects the industrialized cities of southern Poland with the Danube Valley to the south and the Danube River that connects Slovakia with Budapest, Hungary, and other riparian cities of southern Europe as well as those to the west in Austria and Germany (see Map 35060, following p. 56).

Before World War II a major hindrance to communication within Slovakia was the orientation of the transportation network toward Budapest, which resulted in extremely poor east-west connections. In response to significant changes in the trade pattern of Czechoslovakia, however, post-World War II reconstruction and new construction has reoriented the net along an east-west axis (see Appendix B). The principal railroads and roads of the province, several of which are parts of international routes for transit freight, follow the major river valleys and connect raw-material areas with industrial centers.

The railroad is the most common freight carrier, although the tonnage carried by truck has increased appreciably and in one year, 1957, even exceeded the rail tonnage (see Table 5, p. 26). The amount of freight carried by river transport is small and that by air transport negligible. According to published plans, the railroad will continue to be the major carrier of bulk freight. In 1959, approximately 43,153,000 tons, or 50 percent of the total bulk tonnage transported, were hauled by rail.\* Coal and coke are the major commodities transported -- chiefly brown coal from the coalfields of Bohemia, which is consumed by thermal electric powerplants in Slovakia, and coke from the Ostrava coal basin, destined for the metallurgical industry. Ores, metals and metal products, and petroleum, which are imported from the USSR, comprise a large part of the total volume of freight.\*\*

\* Total freight moved by rail in Czechoslovakia in 1959 was 180,510,000 tons.

\*\* Probably all of the 1,752,000 tons of petroleum and 4,651,000 tons of iron ore from the USSR are imported through the Čierna nad Tisou transloading station, thereby contributing significantly to the congestion at these key railroad yards. Much of this freight transits Slovakia to industries in the Czech Lands. Another transloading station at Veľké Kapušany became operational in January 1960. The first transshipment through this station consisted of grain.

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Table 5

Changes in Freight Shipments in Slovakia by Types of Carrier a/  
Selected Years, 1937-59

Year	Rail		Truck		Water Transport		Total	Index (1948 = 100)
	Thousand Tons	Per- cent	Thousand Tons	Per- cent	Thousand Tons	Per- cent		
1937	8,773	95.9	N.A.	N.A.	375	4.1	9,148	65.5
1948	12,622	90.3	1,005	7.2	350	2.5	13,977	100.0
1953	31,891	62.3	18,332	35.8	944	1.9	51,167	366.1
1954	30,358	55.6	23,277	42.7	939	1.7	54,574	390.5
1955	32,320	55.4	24,450	41.9	1,553	2.7	58,323	417.3
1956	33,272	52.8	28,515	45.2	1,257	2.0	63,044	451.1
1957	36,339	49.0	36,588	49.3	1,265	1.7	74,192	530.8
1958 <u>b/</u>	39,049	50.3	37,145	47.9	1,430	1.8	77,624	555.4
1959 <u>b/</u>	43,153	51.6	39,102	46.7	1,406	1.7	83,661	598.6

a. 18/, except for 1958 and 1959. Shipments of freight are in tons carried.  
A negligible amount of air freight is excluded.

b. 19/

In 1959 the railroad net included approximately 2,215 miles of line, about 25 percent of which was double tracked and 6 percent electrified (see Appendix B). The average density of the Slovak railroad net, however, is less than half that of the Czech Lands. Even with postwar reconstruction, railroad modernization has not as yet kept pace with industrialization.

Rail traffic is heavy in the Bratislava and Žilina areas on lines serving the various new or expanded industrial establishments at Kysucké Nové Mesto, Žilina, and Martin and the railroad repair shops at Vrútky. Many of the industrial cities in the upper Váh Valley are on the double-tracked Žilina-Košice-Čierna nad Tisou route, part of the "Friendship Line" connecting Prague with Moscow (see Appendix B). This partly electrified route carries a substantial percentage of the imported raw materials and grain necessary to Czechoslovakia and also carries the Czech finished products and uranium ore that are freighted eastward to the USSR (see Figures 13, 14, 15). The greatest frequency of traffic is on the Ostrava (Moravia)-Žilina and Žilina-Košice sections of the route. The Ostrava-Žilina section of this line and the Žilina-Komárno section of the Váh Valley line together comprise a major route for Polish coal and coke trains that transit Slovakia en route to Hungary and Austria.

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Figure 13. Transloading ore at Čierna nad Tisou. This time-consuming operation is necessary because of a difference in gauge between Slovak and Soviet railroads.



Figure 14. Grain being transloaded from broad-gauge boxcars to others of standard gauge. Gravity aids this operation at Čierna nad Tisou.

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Figure 15. Transferring petroleum from broad-gauge tank cars to standard-gauge tank cars. Such transfers contribute to the tieup at the Čierna nad Tisou border station.

The rail service has to some extent been disrupted because of the failure of the railroad system to keep pace with the industrialization within Slovakia and with the shift in the direction of foreign trade.\* Trains reportedly are late in arriving at their destinations and turn-around time is too long. Owing to longer runs, improper maintenance, and heavier trainloads, locomotives tend to break down more often than formerly. Crucial classification yards that are without automation include those at Bratislava, Košice, and Žilina; the border station at Štúrovo; and the transloading station at Čierna nad Tisou.\*\* Some lines having roadbeds constructed for low axle pressure cannot be used for movement of heavy industrial raw materials or finished products. Shipping efficiency also is reduced by generally poor management, insufficient rolling stock, and lack of labor discipline during unloading.

\* Otakar Simunek stated at a meeting of the National Assembly on 17 April 1961 that serious defects occurred last year in railway transport, with the result that this sector is not supporting the growing demands of the national economy. 20/

\*\* On Christmas Day 1960, members of the "Čierna Lokomotiva Sports Club" unloaded an entire Soviet train of 63 cars so that Czechoslovakia would not incur a 3,000-ruble fine assessed for cars tardily returned to the USSR. 21/

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Figure 16. Route 59, a national highway. A stretch of this main road crosses a heavily forested area near Liptovska Osada, in the Nízke Tatry Mountains. Agriculture along the road is limited to grazing and growing hay and potatoes.



Figure 17. Road through a mountain village. Like many roads of local importance only, this one connecting Ružomberok in the Váh Valley with Dolný Kubín in the Orava Valley has a rolled-dirt surface.

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Truck transportation has grown tremendously in Slovakia and now holds the place of the major carrier of short-haul tonnage and small rapid-delivery package freight (see Table 5, p. 26). Most of the freight carried is bulk from mine or quarry to railhead or ores and machinery from railhead to factories. The road network consists of 9,936 miles of roads of national significance and 9,611 miles of roads of local importance only (see Figures 16, 17). None of the roads of national importance are divided, 4-lane, high-speed highways, and less than half of the roads comprising the total mileage have paved surfaces. The road density of about 40 miles of road per 38 square miles of territory is lower than that in the Czech Lands and considerably lower than that in Western Europe. Denmark, for example, has 74 miles of road per 38 square miles.

The Danube River, the only international waterway available to Slovakia, is navigable by barges of up to 1,000 tons for 106 miles along the southern boundary of the province and has the major advantages of connecting Slovakia with other riparian states and affording access to the Black Sea. Komárno, a major river port and shipbuilding center, and Bratislava are 1,097 and 1,161 miles, respectively, from the mouth of the Danube.

Within Slovakia, shallow channels and fluctuations in the water level of the rivers restrict the role of waterways in transportation. Only a short section of the Váh from Komárno to Kolárovo is currently navigable. The fulfillment of plans for regulating the Váh River, however, will make it navigable by barges of 1,000 tons as far upstream as Žilina.

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VII. IndustryA. General

Since its seizure of power in 1948 the Czechoslovak Communist government has avowed that through industrialization the economic standard of Slovakia will attain the same level as that enjoyed in the Czech Lands.\* Since 1948, a total of 215 new enterprises has been established and 145 older plants have been remodeled or expanded. Industrial development necessitated improving the transportation network and this in turn stimulated the influx of additional industries.

The volume of industrial production in Slovakia has been increasing at a rate greater than the national average, and Slovak industry is accounting for an ever-increasing part of the national industrial product, rising from 13 percent in 1948 to 17 percent in 1960, and expected to rise to 20 percent by 1965. The industrial growth has been of sufficient magnitude to encourage some government officials to remark that industry has already surpassed agriculture as the most important sector of the Slovak economy. The major part of the industrial expansion and investment is in the metallurgical and chemical industries, and, to an even greater extent, heavy engineering -- all of which are highly dependent on foreign sources for raw material (see Map 35062, following p. 56).

B. Metallurgical

The iron and steel industry of Slovakia is still of provincial rather than national importance. Before World War II the steel-producing facilities, which were wholly concentrated at Podbrezová in the upper Hron Valley, produced 95,000 tons of steel, or 4 percent of the total Czechoslovak production. Except for a drop in production shortly after World War II, Slovak steel production has risen steadily. By 1960 it had reached 237,000 tons, but its share of the national production remained at 4 percent because of increased production at Ostrava and Třinec in the Czech Lands. The steady increase in steel production in Slovakia is attributable to the expanded capacity of existing facilities of the Sverma Ironworks at Podbrezová rather than to new plants. Pig iron for the Podbrezová works is obtained via rail from Tisovec (the

\* To this end the annual capital investment has been increased. The capital investment expenditure for the national economy per person in Slovakia is 2,739 koruny (kcs; 7.2 kcs equals US \$1), whereas in the Czech Lands it is 2,340 kcs. In 1959, investment in Slovakia totaled 11,007 million kcs of which 3,761 million (34 percent) was invested in industry, mostly heavy industry such as machine building. 22/

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site of the only blast furnaces in Slovakia), in the Rimava Valley of the Slovenské Rudohorie (see Figure 18). Production in 1960 was 63,000 tons, or about 1 percent of Czechoslovak pig-iron production.

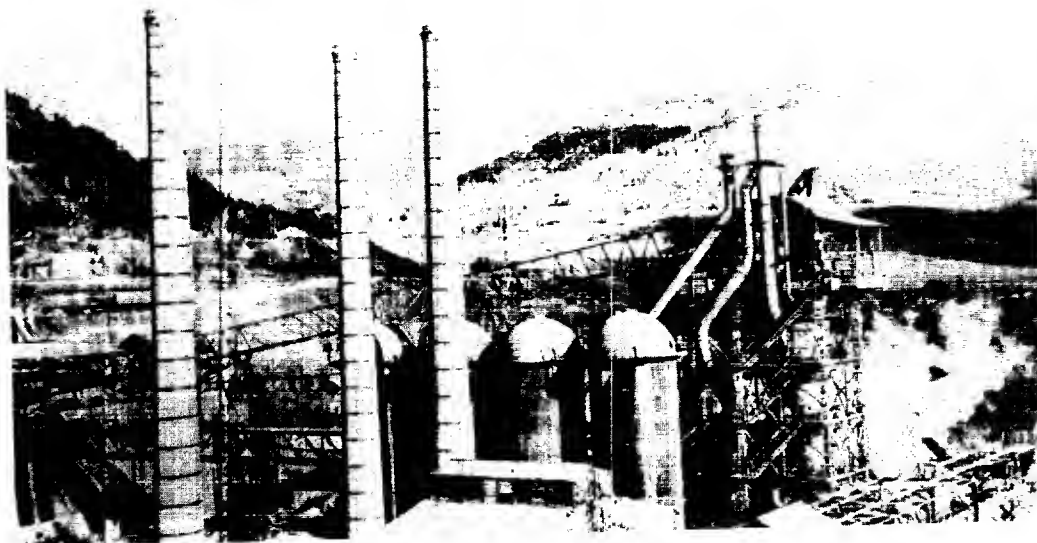


Figure 18. The blast furnaces at Tisovec. This part of the Sverma Ironworks is located on the Rimava River in the Slovenské Rudohorie.

An integrated metallurgical complex (Vychodoslovenské Železářny, East Slovak Ironworks) with a planned capacity of 3.5 million tons is under construction near Košice.\* Reportedly the first blast furnace will be operational by 1963, but the entire complex will not be completed and fully operational before 1970. <sup>23/</sup> Obviously the Košice site was selected because of (1) its proximity to the Czechoslovakia-USSR border since most of the raw materials will originate in the USSR;\*\* (2) the opportunity to use the normally empty iron-ore cars returning from Ostrava to the Čierna nad Tisou border station for transporting coking coal; (3) the availability of labor; and (4) the opportunity for improving

\* In June 1951, work began on a similar metallurgical complex identified as HUKO at Vel'ka Ida south of Košice. This project was discontinued sometime in 1953 for economic reasons. Little construction was completed. The current construction commenced in July 1959 at Barca, only several kilometers from the previous site. Available information indicates that the project may be behind schedule.

\*\* Iron-ore concentrates also will be obtained from the Rudňany beneficiation plant currently under construction. <sup>24/</sup>

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the standard of living of the people in this area. Other industries are planned for the region, primarily those that utilize the byproduct materials resulting from the processes of making iron, steel, and coke. A current program of recruiting Slovak labor for industrial employment in the Ostrava region of the Czech Lands is a means to insure a nucleus of trained labor for future requirements in Slovakia. 25/

The only aluminum plant in Czechoslovakia is the new aluminum works at Žiar nad Hronom (formerly Svätý Križ nad Hronom). Although commencing partial operations in 1953, the works did not become fully operational until 1958, after the construction of a thermal electric powerplant and the installation of the second section of the electrolysis plant. Bauxite is imported from Hungarian deposits in the Bakony and Vértess Mountains, approximately 100 miles distant by rail. Although production had dropped from 24,000 tons in 1955 to about 16,000 tons in 1957, an output of 56,000 tons was planned for 1960. 26/

The smelting of imported ferromanganese, ferrochrome, and ferro-silicon ores is another new industry in Slovakia. Istebné and Mokrač were selected as sites for the new plants because of their proximity to the hydroelectric powerplants at Ústie and Krpel'any and to consumer industries at Ostrava and Podbrezová (see Figure 19). A plant for smelting nickel ore imported from Albania is under construction at Sereď, on the Váh. 27/ On the other hand, copper ores, primarily from the USSR but some from low-grade domestic sources, are smelted in pre-World War II plants at Krompachy. Smelter production of copper and the ferroalloys remains insufficient to meet domestic requirements, and they must be imported -- primarily from the Soviet Union.

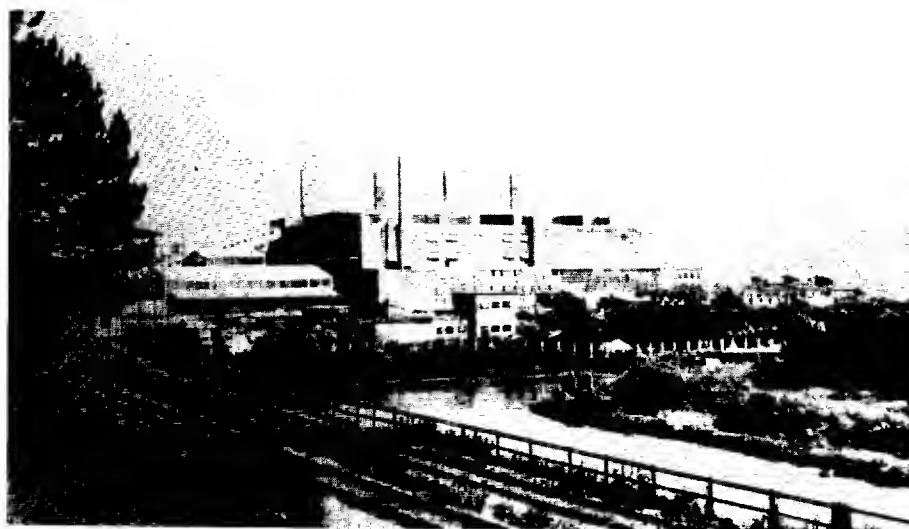


Figure 19. The ferroalloy works at Istebné. The plant on the Orava River is connected by rail with the "Friendship Line" near Krpel'any.

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C. Engineering

Heavy engineering is the basis for the entire industrialization program. Until recently it was an extremely limited sector of the economy, but it is expanding rapidly -- particularly in the field of chemical equipment, transport equipment (including rolling stock and locomotives), and roller bearings. 28/ Production in all fields of heavy engineering accounts for 22 percent of the total industrial production of Slovakia.

Among the foremost Slovak engineering works are the K.J. Vorosilov plant at Dubnica nad Váhom and the J.V. Stalin plant in Martin (see Map 35062, following p. 56). The Vorosilov plant has been enlarged about 100 percent since 1945. 29/ Although primarily a munitions works, the Vorosilov plant recently manufactured the first industrial electric locomotive in Slovakia. 30/ The J.V. Stalin plant in Martin manufactures various types of engineering machinery, diesel motors, and "special iron wagons" (probably tanks). 31/ Of major importance to the Czechoslovak rail transport are the heavy engineering works Tatra at Poprad and Podpolianske Strojárne at Detva, whose production includes freight cars, railroad car chassis, truck-mounted cranes, and construction machines. In 1959, Slovak plants manufactured 1,834 freight cars, 32/ accounting for about 40 percent of the Czechoslovak total. 33/ Motorcycles and light scooters are produced at the K. Gottwald Works (before 1948, the Považská Strojárne) at Považská Bystrica. The Slovak demand for trucks has partially been met by the Tatra 141/B trucks reportedly manufactured at Bánovce nad Bebravou (see Figures 20, 21).

Other important engineering works are at Košice (construction and chemical machine equipment; also, reportedly, the sole manufacturer of pneumatic hammers and drop hammers for CEMA\* countries), Myjava (armatures), Kubra (lathes), Brezno (bridging material, cultivators, and special railroad cars), Nové Mesto nad Váhom (air conditioning), and Snina (presses, sprays, and drills).

The shipyards at Komárno, one of the largest river-boat yards in Europe, are an important segment of the engineering industry (see Figure 22). In 1959, 25 ships of various types were constructed; and in 1960, 35 ships. Most of the construction is for the USSR and is delivered via the Danube River and the Black Sea.

Several factories in Slovakia have been expanded or newly constructed to meet the growing demand for bearings. Slovak production of bearings accounts for 28 percent of the Czechoslovak total. 34/ Plants of national importance are located at Kysucké Nové Mesto (see Figure 23), Prešov, and Stará Turá. A plant to manufacture miniature ball bearings is under construction at Skalica.

\* Abbreviation for Council of Mutual Economic Assistance.

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Figure 20. A general view of the Tatra Automobile Works at Bánovce nad Bebravou. Note the agricultural character of the surrounding countryside.



Figure 21. Main entrance to the Tatra Automobile Works. Tatra 141/B trucks, in great demand in Slovakia, probably are produced here.

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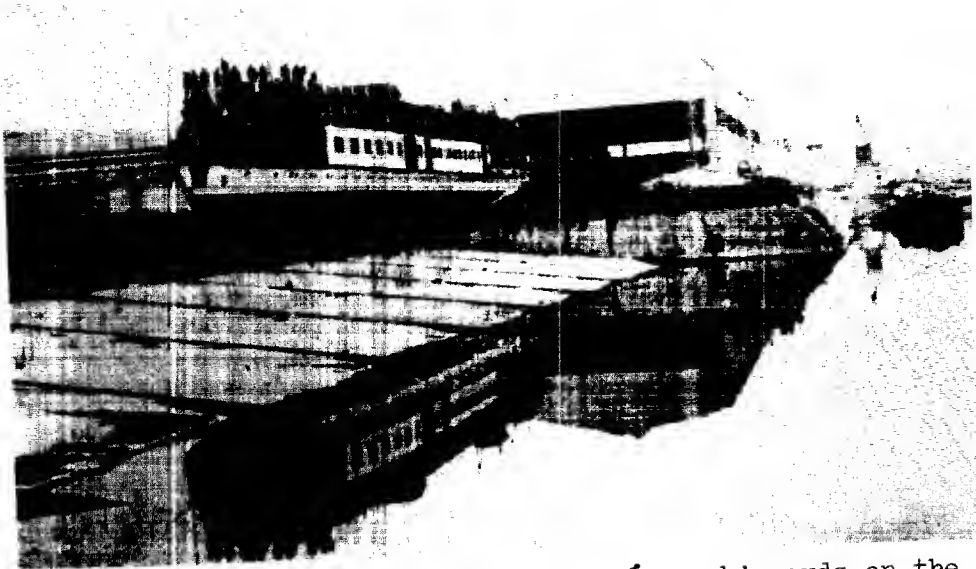


Figure 22. A passenger ship at Komárno shipyards on the Danube River. Most of the river boats built at Komárno are for the USSR.



Figure 23. The Precision Engineering Works at Kysucké Nové Mesto. Note the cultivated land in the foreground and on the lower slopes of the Javorníky Mountains.

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#### D. Chemical

The chemical industry has been expanding rapidly and gaining a significant role in Slovak industry. In 1960 the Slovak chemical industry accounted for 24 percent of the chemical production of Czechoslovakia. Emphasis is on production of sodium hydroxide, for use in the manufacture of synthetic fibers, and sulfuric acid for industrial use, fertilizers, and synthetics. Slovak chemical plants now produce 27 percent of the sulfuric acid, 20 percent of the phosphorus pentoxide ( $P_2O_5$ ) and all of the polyvinylchloride (10,122 tons in 1960) produced in Czechoslovakia.

The chemical industry is dispersed among several widely scattered plants including those in the pre-World War II centers of Bratislava, Žilina, and Nováky (see Figure 24).



Figure 24. The Jura J Dimitrov Chemical plant at Bratislava.

Bratislava and Žilina produce plastics, synthetic fibers, sulfuric acid, soda, fertilizers, and, probably, explosives. The combined production of chemical plants at Nováky, Svit, Strážske, and Humenné include sodium hydroxide, chlorine, polyvinylchloride, carbide, nitric acid, ammonium nitrate and sulphate, and the synthetic fiber silon (see Figure 25). The pharmaceutical industry includes the production of penicillin and streptomycin at Slovenská L'upča and medicinal chemicals at Hlohovec (see Figure 26). A chemical plant scheduled for completion by July 1962 is under construction at Šal'a. 35/ It is to use natural gas piped in from the Záhorská Ves gasfields to manufacture nitrates (see Map 35061, following p. 56).

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Figure 25. The recently constructed Humenné Chemical Plant. This plant on the agricultural plains of eastern Slovakia is the only Slovak producer of the synthetic fiber silon (nylon).



Figure 26. Packing pills at the Hlohovec pharmaceutical plant. Slovak women comprise most of the labor force in light industry.

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# E. Other

The growing capacity of Slovakia for petroleum refining and petrochemicals has outstripped its capability for production of petroleum. The principal petrochemical complex, Slovnaft (also referred to as Podunajské Biskupice) near Bratislava, covers more than 2 square miles and includes within its area a refinery and a chemical plant. It is in partial operation but is scheduled to achieve full operational status by 1962. <sup>36/</sup> This complex will receive petroleum from Soviet fields via the CEMA petroleum line, which is currently under construction. Smaller refineries are located in Bratislava and near Dubová, in the upper Hron Valley (see Map 35062, following p. 56).

A rubber-products industry, centered on Bratislava and Púchov, accounts for 25 percent of the Czechoslovak production of rubber goods. The Gumon and Matador rubber plants in Bratislava are situated favorably in relation to the new tire factory, <sup>for increasing tires</sup> in the nearby suburb of Rača. The First of May works at Púchov, which makes tires, is located near the motorcycle and scooter plant at Považská Bystrica.

The electrotechnical industry of Slovakia is new and small but is expanding steadily. Products range from cables, made in Bratislava, to television sets, made in Nižná; and plants at both places probably include electronic equipment for the military among their end products. This industry employs many women -- in the Křežlik-Dukla works in Poprad, where electrical parts for automobiles are manufactured, women constitute most of the labor force.

The manufacturing of construction materials and forest-related products employs approximately 40,000 workers and accounts for 6 percent of the industrial production of Slovakia. Approximately 20 percent (92,000 tons) of Czechoslovak paper is produced in Slovakia. Both paper and cellulose plants are located in Žilina, Ružomberok, and Martin and cellulose plants at Harmanec near Banská Bystrica, and Hencovce near Vranov (see Figures 27, 28).

The building-materials industry is centered primarily in the mountains of central Slovakia. Forty percent (1959 production, 1,900,000 tons) of Czechoslovak cement is produced in Slovakia. Of the 12 cement plants in the country, 5 are in Slovakia. The largest is at Senica, near Banská Bystrica. Eastern Slovakia, long dependent on other areas for cement, now has a small plant at Bystré, near Giraltovce (see Figure 29).

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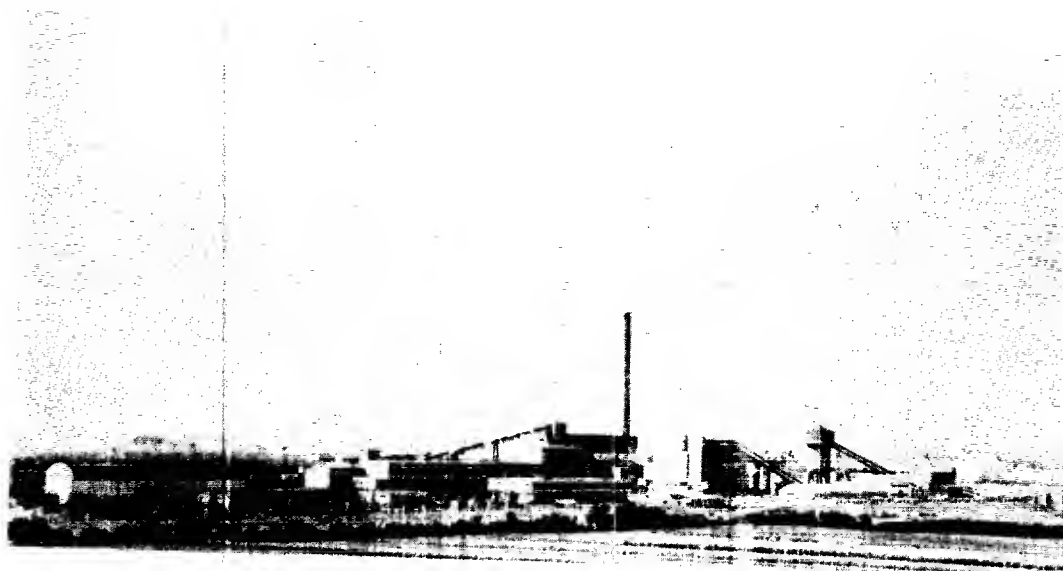


Figure 27. Wood-processing works at Hencovce. Cultivated fields extend almost to the walls of the plant.

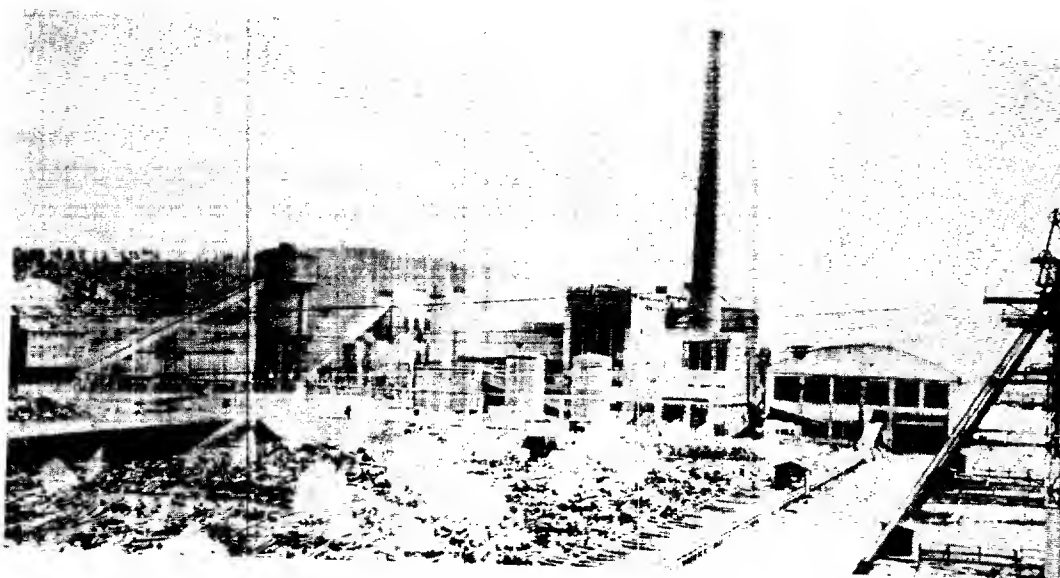


Figure 28. Beech logs for processing at Hencovce. The logs are kept in timber-storage tanks until ready for use.

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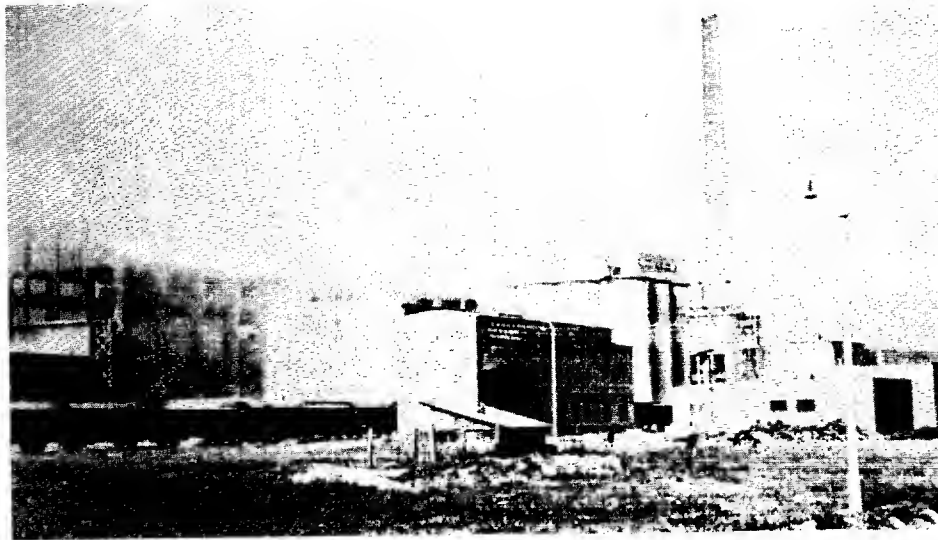


Figure 29. The cement plant at Bystré in eastern Slovakia.

The textile industry of Slovakia, which was well established before the formation of the Czechoslovak state, accounts for 8 percent of the total national production, and the Slovak production of wool accounts for a larger than average share -- 20 percent of the national total. The principal textile centers are Bratislava and Ružomberok (cotton), Trenčín (wool), and Kežmarok (linen). The Chemosvit plant at Svit is the major producer of synthetic fibers.

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VIII. Conclusions

Industrial progress in Slovakia to date has already been sufficient to increase significantly the industrial capacity of Czechoslovakia as a whole. Since 1948, new industries have been established and older ones have been modernized and expanded. Emphasis of the industrialization program has been on the engineering, chemical, and metallurgical branches of industry. Industrialization has prompted a notable increase in the power base through the construction of thermal electric and hydroelectric powerplants as well as the development of specific transportation routes to meet the new internal trade requirements. The decision to sustain the current high rate of industrial growth is apparently a firm one -- despite the handicaps of inadequate fuel, power, basic raw materials, and transportation, combined with the latent Slovak opposition to the Czechs.

To date, industrial development has been concentrated mainly in the middle and lower Váh Valley and around Bratislava, but eastern Slovakia is being increasingly affected, and the geographic relationships of the entire province are being altered. Areas and settlements are being transformed from a predominantly agricultural pattern to an industrial-agricultural pattern, accompanied by a notable shift of population from rural areas to towns having some established industry. In the changing economic pattern, there is a perceptible trend toward the formation of industrial regions that, for the first time, cross the provincial border in some places. For example, the middle Váh Valley industrial area, centered on Žilina is expanding and merging into the Ostrava industrial region in the Czech Lands. Nothing so far, however, indicates a planned development of industrial regions that bridge the political boundaries between Slovakia and adjacent Satellites.

The industrialization of Slovakia reflects the increasing economic interdependence of the Bloc countries, and the emphasis on certain industries and products may indicate Slovakia's role within the framework of the CEMA division of labor. Existing agreements for the import or exchange of electric power form the initial step toward unification of a power grid throughout the Satellites. The international division of labor as determined by CEMA thus far, however, has not included the export of surplus Slovak labor to "friendly Socialist countries" that have labor shortages, such as East Germany.

Slovakia undoubtedly will attain a higher standard of living as a result of the program. The agricultural character of the provincial economy will be changed to one of industry and agriculture, particularly in southwestern Slovakia. Slovak industries eventually will be able to produce at a cost comparable to that of counterpart industries in the Czech Lands. The industrialization of Slovakia will strengthen Czechoslovakia's position within the Bloc, will increase its capability to produce military armaments, and will enable the country to engage more widely in world trade.

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## APPENDIX A

POWERI. Hydrographic Development

The Váh River extends 245 miles from its source in the Tatry Mountains to its confluence with the Malý Dunaj (Little Danube) at Kolárovo. The catchment area covers approximately one-fourth of Slovakia. Utilization of the river for hydroelectric power is hampered by (1) seasonal fluctuation of volume, (2) a low gradient (6 feet per mile) in the important Žilina-Kolárovo sector, and (3) terrain that precludes the construction of high dams.

To utilize the low-gradient stretch of the Váh River, it was divided into four sectors. Each sector has a combination dam and hydroelectric powerplant and a canal system that parallels the Váh and conducts the water to three hydroelectric powerplants located farther downstream. The waters of the upper sector are regulated primarily by the Ústie dam on the Orava River, a tributary of the Váh (see Map 35061, following p. 56). In this upper sector, hydroelectric powerplants are operating at the Orava dam, Krpel'any, and Sučany, and another plant is under construction at Lipovec. The units of the second sector are in various stages of construction, with a dam and powerplant at Dolný Hričov and run-of-the-river type of powerplants at Mikšova and Považská Bystrica. On its completion this sector will generate 170 megawatts annually. Units in the third sector are in operation. They include the dam and hydroelectric powerplant at Nosice, a weir at Kočkovce from which a diversionary canal leads water to the powerplants at Ladce, Ilava, Dubnica, and Skalka (officially: Skalská Nová Ves). The Dubnica powerplant supplies part of the power needs of the Voroshilov armaments works at Dubnica. The Ladce powerplant was completed and in operation before World War II. The total capacity of this third sector is 67 megawatts. <sup>37/</sup> The fourth canal system includes the Kostolná, Nové Mesto nad Váhom, and Horná Streda plants, which were put in operation between 1952 and 1955, and a newer plant at Madunice. When fully operational, the fourth system will have a capacity of 105 megawatts.

Still in the planning stage is a fifth sector designed to regulate and utilize the lower section of the Váh for hydroelectric power. Powerplants are to be constructed at Hlohovec, Sered, and Neded, the combined output of which is to be 47 megawatt-hours. Another dam is planned for the upper Váh at Liptovská Mara. The plans call for a reservoir equal to or larger than that at Orava and a 145-megawatt powerplant whose production will exceed any other plant on the Váh. Reportedly, upon completion in April 1962 the entire Váh hydroelectric power system will produce 1,000 megawatt-hours annually.

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## II. Thermal Generating Plants

The largest thermal electric powerplant in Slovakia is at Nováky.\* It has a capacity of 178,000 kilowatts, or two and one-half times the capacity of all Slovakia in 1937. An older plant at Handlová has a capacity of 20,000 to 25,000 kilowatts. Both of these plants burn coal mined locally. They account for nearly all the thermally generated electricity in central Slovakia. Much of the power requirement of eastern Slovakia is met by the output of the thermal electric powerplant at Krompachy, which has a capacity of 46,800 kilowatts. The Krompachy plant, however, like others at Zvolen, Košice, Komárno, and elsewhere in Slovakia is dependent on coal imported from the Czech Lands. Major thermal electric powerplants are also located at Bratislava, Dubnica nad Váhom, and Ružomberok. The Bratislava plant uses gas for fuel. A thermal electric powerplant with a 600,000-kilowatt capacity is planned for Vojany, which should alleviate the power crisis in eastern Slovakia.

An atomic powerplant, with a planned capacity of 150 megawatts, reportedly is under construction at Bohunice, near Trnava (see Map 35061, following p. 56).

Plans for hydroelectric powerplants include one at Ružin, on the Hornad River, that is to be operational in 1964 and, allegedly, will be the largest until the construction of plants on the Danube River. Three sites on the Danube are under consideration for the construction of hydroelectric powerplants -- opposite Wolfsthal, Austria; at Medved'ov; and at the confluence of the Ipel' with the Danube. Their construction will depend on agreements with Austria and Hungary, which also border the Danube River at these sites.

## III. Transmission Lines

One important transmission line completed recently connects the Ostrava-Trinec surplus power region of Moravia with Lemešany, near Košice in eastern Slovakia, via Lískovec (in Moravia), Sučany, Spišská Nová Ves, and Krompachy. Lískovec, Sučany, and Lemešany are important distribution centers on the line. Sučany controls power transmitted to industrial installations in the upper Váh Valley, such as the engineering works at Martin and the ball-bearing plant at Kysucké Nové Mesto, and Lemešany serves the industrial installations in the Košice-Prešov areas. Another transmission line between Žilina and Bratislava is

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\* The powerplant is located between Nováky and Zemianske Kostol'any. Many Czechoslovak publications refer to it as the Zemianske Kostol'any plant.

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important because it interconnects the hydroelectric plants along the Váh that serve various industries in Žilina, Považská Bystrica, Trnava, and Bratislava. The aluminum plant at Žiar nad Hronom, a glutton for electricity,\* is connected with the Váh hydroelectric network although it also has its own powerplant.

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\* Approximately 20 thousand kilowatts of electricity are required in the production of 1 ton of aluminum.

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APPENDIX B

RAILROADS

During World War II the Slovak transportation network was seriously impaired by the total destruction of or damage to railroad switches, bridges, trestles, culverts, and thousands of kilometers of track. In addition, approximately three-fourths of the rolling stock was destroyed, damaged, or commandeered. After the war, an intensive program for the reconstruction and improvement of the railroads was initiated. Between 1949 and 1956 the government of Czechoslovakia invested 7 billion koruny in the transportation and communications networks of Slovakia, an amount that was 18.2 percent of the total investments in Slovakia during this period. 38/

The total Slovak railroad mileage in 1959 was 2,215, of which 578 miles were double-tracked and 130 miles electrified. Narrow-gauge lines are short and of slight importance to the transportation network. The average density of the Slovak railroad net is 4.5 miles of track per 38.6 square miles, whereas the average density of the railroad net in the Czech Lands is 9.5 miles of track per 38.6 square miles. The population is so distributed, however, that about 50 percent of the inhabitants of Slovakia live within 3 miles of a railroad line, in spite of the sparse transportation pattern and the fact that some settlements in the hilly and mountainous sections of the province are as much as 15 miles from a railroad.

Although traffic is heaviest in the Bratislava area, on lines in the Váh Valley, and on the Friendship Line, it is also heavy on (1) the Slovak section of the Prague-Breclav-Kuty-Bratislava line -- which continues from Bratislava to an international crossing point at Marchegg, Austria, and on through Vienna to the outlet port of Trieste, Italy;\* and (2) the Bratislava-Štúrovo line across southern Slovakia, which enters Hungary at Szob and continues to Budapest and other cities of southern Europe.

The major routes of internal importance connect raw-material areas with industrial centers. These routes frequently are the same as those of international importance, such as the Friendship Line, over which iron ore and other raw materials from the Košice-Prešov area are shipped

\* A transit goods agreement was concluded with Italy on 3 February 1960 for the transit of a minimum of 150,000 tons of goods per year (60,000 tons to be coal and minerals) through Trieste, Italy. 39/

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to industrial cities in Bohemia. The strategic Bujanovsky tunnel, the longest (approximately 2 miles) double-tracked tunnel in Czechoslovakia, is located on this route. The Rožňava-Turna nad Bodvou line (Line of Peace), another important rail link that was planned before World War II, was completed in 1955. It established a new route between eastern and southwestern Slovakia, connecting the cities of Košice and Bratislava via Lučenec, Zvolen, and Nové Zámky; it also connects the minerals area of the Slovak Ore Mountains with the Košice industrial area. Other important lines include the Hron River line, which connects the industrial and mining towns along the upper Hron Valley with the agricultural and densely settled plains of southwestern Slovakia, and the Váh Valley line connecting the many new industrial plants that have been established along the Váh River.

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APPENDIX C

GAPS IN INTELLIGENCE

Although some information is available on the industrialization of Slovakia, additional information in considerably greater detail is needed to determine the full scope of the program that is dynamically altering the province.

No data are available on the number and distribution of women employed in industry. Little has been published on the commuting distances of employees. Inadequate data are available on the source and quantity of imports of raw material for industrial enterprises, on plant production, and on the distribution of end products. Little is known about the types and quantities of materiel produced in the plants devoted to military production. Little information is available on the transloading station at Vel'ké Kapušany -- data are needed on the type and quantity of freight transloaded there and the effect this new transloading station has had in relieving the heavily congested yards at Čierna nad Tisou.

These gaps in intelligence are attributed in part to the security classification on economic information and its restricted dissemination and in part to the inclusion of statistics for Slovakia within the total figures available for Czechoslovakia -- a situation that tends to obscure the status of Slovakia as a unit within the framework of Czechoslovakia and therefore to obscure the contribution of Slovakia to Czechoslovakia's increasingly important role within CEMA.

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APPENDIX D

SOURCE REFERENCES

Most of the information for this report was obtained from unclassified Czechoslovak publications -- newspapers, books, and periodicals. Classified intelligence reports were used only when conflicting information or no other information was available.

Data on area, population, and settlement were taken from Czechoslovak and Slovak publications. Information on the attitudes of the people was obtained from foreign radio broadcasts covered by the Foreign Broadcast Information Service (FBIS) and from intelligence reports. The physical geography is based primarily on finished intelligence reports and, to a lesser extent, on Czechoslovak publications. Czechoslovak statistical yearbooks and books published in Slovakia were the major sources of economic data. Much of the information relating to industrial plants -- construction, operational status, and production -- and the transportation network was obtained from Slovak newspapers.

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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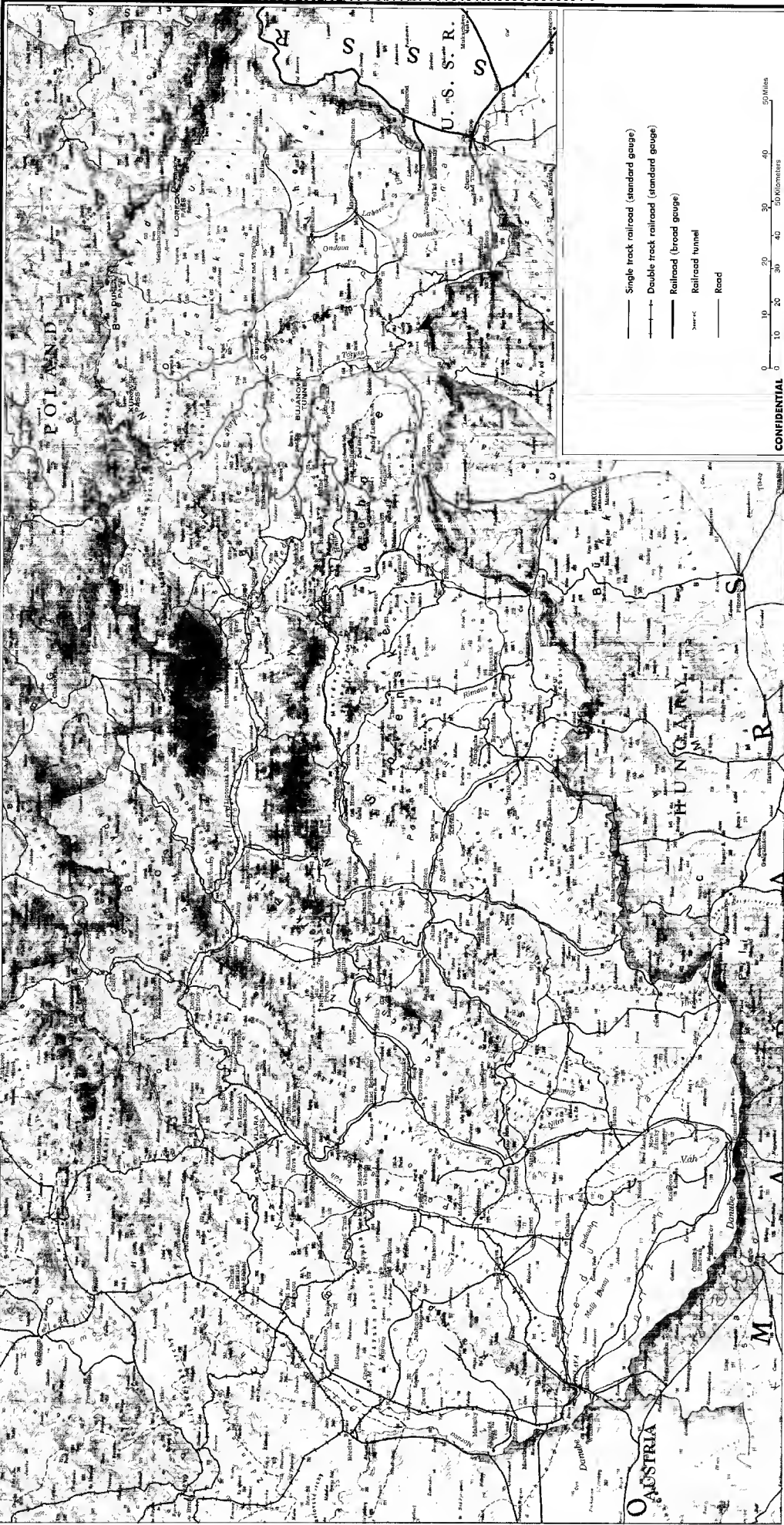
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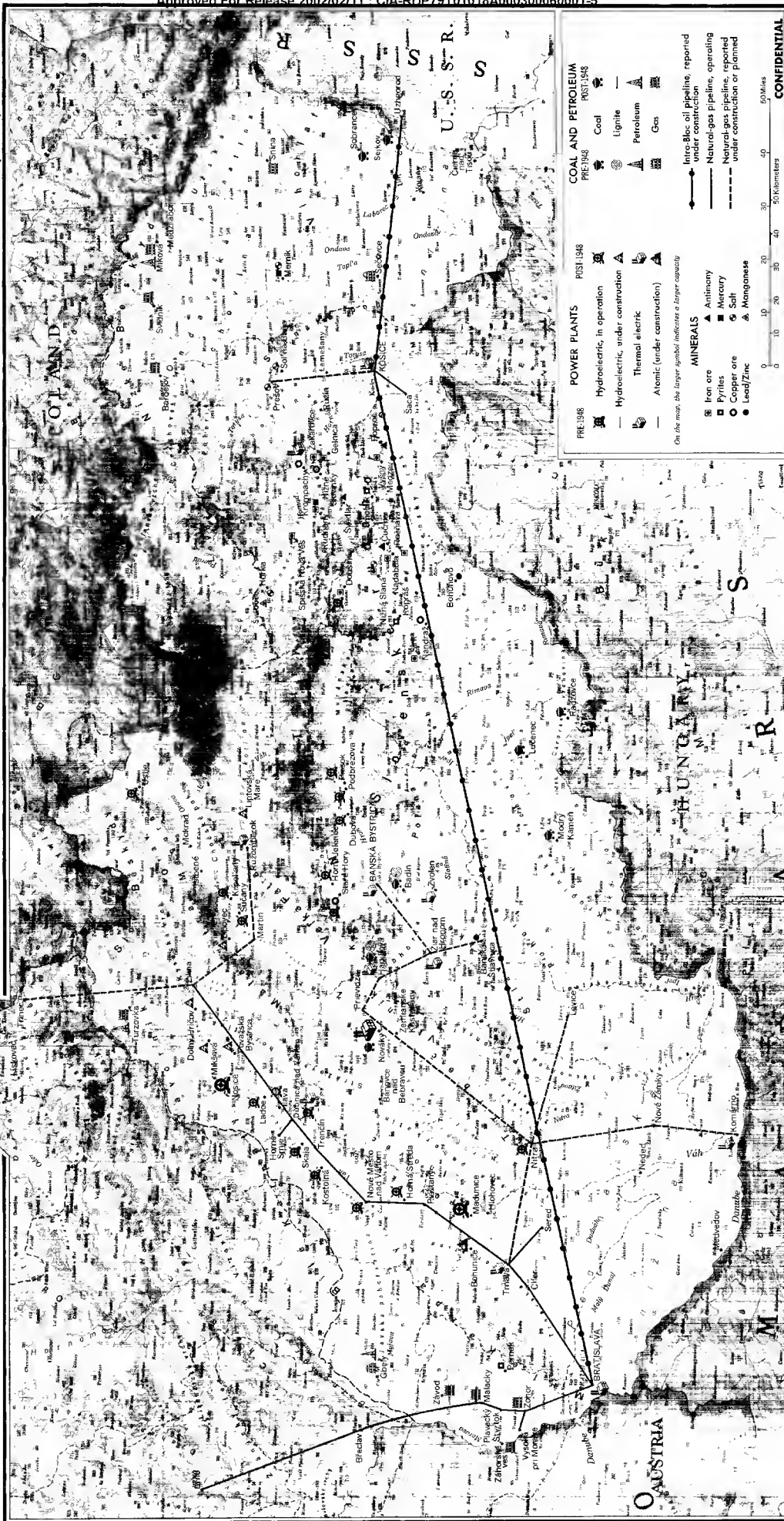


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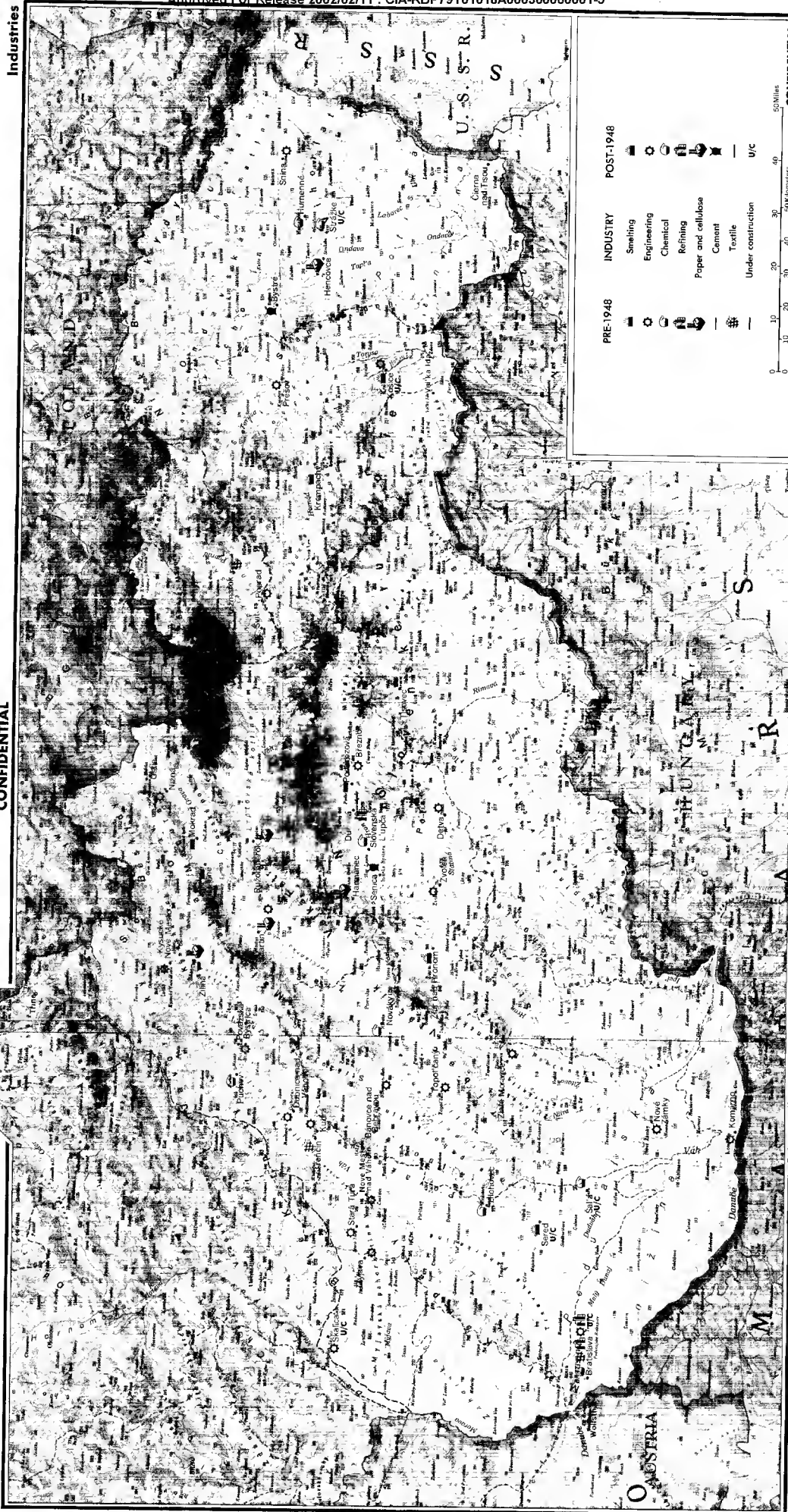
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